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CROSS-SECTORAL ISSUES

Integrated Economic-Environmental Accounting

Progress Report of the Secretary-General of the Conference

Introduction

1. This report responds in part to the GA Resolution 44/228 of 22 December 1989 which decided in its para. 15 (c) that UNCED should aim at recommending measures to be taken at the national and international levels to protect and enhance the environment, taking into account the specific needs of developing countries, through the development and implementation of policies for sustainable and environmentally sound development with special emphasis on incorporating environmental concerns in the economic and social development process and of various sectoral policies and through, inter alia, preventive action at the source of environmental degradation, clearly identifying the sources of such degradation and appropriate remedial measures, in all countries. It also responds to decision 1/28 c of the first session of the Preparatory Committee and to decision 2/6 taken in its second session which requested the Secretary-General to continue to study the interrelationship between environment and development taking into account, inter alia, decision 1/25 of the Preparatory Committee in its first session.

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2. This report was prepared in close collaboration with the United Nations Statistical Office within Department of International Economic and Social Affairs (DIESA) which are currently developing methodologies for integrated environmental-economic accounting in co-operation with the World Bank and other organizations. Relevant information was also obtained from UNCTC, the World Resource Institute, ECLAC, OECD, UNU/Wider and ECE.

Background

3. The overall goal of economic development is the fulfilment of human needs and aspirations and to the extent possible the accumulation of wealth for the needs of future generations. The development process is made possible by the use in production systems of key inputs such as natural resources, man-made capital, technology, labour and managerial capacity. In view of the increasing stress observed on some ecosystems of the planet and the depletion of some of its natural resources, the concept of sustainable development has been introduced to ensure the continuation of economic development without compromising further development in the future. Sustainable development therefore recommends that policy decision-makers in aiming to fulfil the needs of present generations should also aim at maintaining the income generation capacity of economies (and enterprises).

4. Sustainable development policies should engender changes in production and consumption patterns as well as significant shifts in technology use and macro and micro-economic management. Moreover, it should shift environmental policies from an approach of dealing with environmental problems after their occurrence to an anticipatory approach of addressing the sources of environmental depletion and degradation. One first step towards the integration of sustainability concerns in macro- economic management would be the establishment of better measurement of how the environment play a crucial role as a source of natural capital and as a sink for by-products generated during the production of man- made capital.

Towards a SNA Satellite System of Integrated Environmental and Economic Accounting

5. Systems of National Accounts (SNA) have provided the most widely used indicators for the assessment of economic performance, trends of economic growth and of the economic counterpart of social welfare. However, three major drawbacks of national accounting have raised doubts about the usefulness of national accounts data for the measurement of long-term sustainable economic growth and socio-economic development. These drawbacks include:

   (a) the neglect of scarcities of natural resources which threaten the sustained productivity of the economy;

   (b) the failure to account for the degradation of environmental quality and its effects on human health and welfare; and

(c) accounting for environmental protection expenditures (defensive expenditures) which tend to increase national product but which may instead be considered as social costs for the maintenance of environmental quality.

6. In view of the fact that no international consensus has yet been reached on how to incorporate environmental costs and benefits as such in national accounts, it seems premature to expect radical changes in the SNA, a well-established system of economic accounts that serves many different, in particular short- and medium-term, socio-economic analyses. Further reasons for not replacing the conventional accounts are the experimental nature of environmental accounting and possible inconsistencies in the valuation of non-marketed goods and bads (pollutants) and the values of market transactions. The elaboration of the standards of environmental and natural resource accounting in an SNA satellite system of environmental accounts has therefore been proposed for consideration in several fora. This approach permits close linkage to the SNA without disrupting the core system. The ultimate objective is twofold:

i) to provide policy decision-makers with more accurate information bases to support sustainable development policies;

ii) to allow users of economic data to choose among different information systems according to their particular area of interest.

7. The proposed satellite System of integrated Environmental and Economic Accounting (SEEA) follows as far as possible the principles and rules established in the SNA. It is based on SNA's production boundary, follows its analysis of costs and outputs and incorporates the same accounting identities between supply and use of products and between value added and final demand. However, traditional systems of national accounts, focusing on market transactions, do not record changes in the quality of the natural environment and the depletion of natural resources. These effects are particularly relevant for the measurement of an adjusted concept of value added in production, which is compatible with long-term environmentally sound and sustained economic growth, and of an adjusted concept of net income, which takes into account the welfare aspects of environmental depletion and degradation.

8. The main objectives of the SEEA can be summarized as:

(a) Segregation and elaboration of all environment-related flows and stocks of traditional accounts.

Satellite accounts, in the narrow sense of detailed accounting for expenditures and revenues in major areas of social concern, have been pioneered by France.(1) There is now an increased interest in identifying separately all flows and stocks of assets in national accounts related to environmental issues and in estimating the total expenditure for the protection or enhancement of the different fields of environment. One objective of this segregation is the assessment of the increasing part of

the Gross Domestic Product (GDP) which reflects so- called "defensive expenditures". These are in effect current efforts to defend people against the effects of pollution and saturation of the sink capacity of ecosystems. It has been argued that such expenditures distort the final results of economic activity, which should be calculated net of the cost of environmental restoration.

(b) Linkage of physical resource accounting with monetary environmental accounting and balance sheets

Physical resource accounts aim at covering comprehensively the total stock of reserves of natural resources and changes therein, even if these resources are not (yet) affected by the economic system. The proposed accounting for these resources in SEEA is considered as the "hinge" by which comprehensive physical resource accounts could be linked to the monetary balance sheets and flows of the SNA. Non- monetary data in physical accounts are thus an integral part of a more comprehensive elaboration of the SEEA.

(c) Assessment of environmental costs and benefits

In contrast to the above-mentioned limited approach, a broader framework for satellite accounting, covering additionally external environmental costs and benefits, is proposed in the SEEA. Taking the current state of knowledge and data availability into account, the SEEA focuses on expanding and complementing the SNA with regard to two major issues, namely:

- the use (depletion) of natural resources in production and final demand and

- the changes in environmental quality, resulting from pollution and other impacts of production and consumption, on one hand, and environmental protection and enhancement on the other.

Possibilities of extending SEEA for the analysis of environmental welfare effects, i.e. the "damage costs" of the impairment of human health, recreation and other aesthetic or ethical values, are further issues under discussion.

(d) Accounting for the maintenance of tangible wealth

The generally advocated paradigm of sustainable development stresses the need to account for the use of both man-made and natural assets in order to be alert to possible non-sustainable growth and development patterns. SEEA therefore extends the concept of man-made capital (stocks of commodities and fixed capital) to include natural assets. As a consequence, SEEA accounts for the additional costs of the depletion and degradation of these assets, which extends the concept of capital formation into one of capital accumulation. A further extension could also reflect the transfer or "discovery" of natural capital for economic use.

(e) Elaboration and measurement of indicators of environmentally adjusted product and income

The consideration of the depletion of natural resources and changes in environmental quality permits the calculation of modified macro-economic aggregates, notably an Environmentally adjusted Domestic Product (EDP). Possibilities of introducing an Environmentally adjusted National Income concept (ENI), which would account for further health and welfare effects of environmental impacts, are also currently being reviewed.

9. Accounting framework and procedures

The difference between the SEEA framework and conventional accounting lies in the introduction of environmental costs of "quantitative" depletion of natural resources and "qualitative" environmental degradation (largely from pollution), mirrored in the expansion of capital asset boundaries to include natural assets.

10. Accounting for Sustainable use of natural resources

Natural resources are considered to be part of the tangible wealth of a nation. The SEEA thus includes, in addition to produced assets of man-made capital goods and stocks of commodities,

(a) produced, but "naturally" grown, assets of agriculture, forestry and fishing and

(b) non-produced natural assets of

- scarce renewable resources "in the public domain", i.e. the natural environment, such as marine resources or tropical forests whose growth is considered to be outside the active managerial control of agriculture, forestry and fishing,

- non-renewable resources of land, soil and sub-soil assets (mineral deposits) and

- cyclical resources of air and water.

- the capacity of the natural environment to absorb and dissipate pollutants and wastes without unacceptable levels of damage and risk.

The depletion of natural resource capital by different economic activities is recorded as an environmental cost of these activities. Together with the costs of intermediate consumption, environmental depletion costs can be deducted from gross output for the calculation of "sustainable gross value added".(2) In order to maintain the accounting identities of the SNA, the same deduction has also to be made from final demand.

11. The above-mentioned physical resource accounting methodologies provide relatively straightforward tools of measuring depletion rates of natural resource stocks or reserves. However, placing monetary values on these stocks or changes therein is more controversial. Where natural resources are substitutable by other - marketed - materials, or human or produced capital, the estimation of the replacement costs, i.e. the market value of procuring the substitute, is probably the best valuation procedure. Where such substitution possibilities do not exist, i.e. in the case of "complementary" resources, valuation is more difficult, since the eventual exhaustion or irreversible degradation of these resources foreclose any options for future generations to produce the same output with the same production technology. Various valuation procedures have been advanced and these include depreciation of the total economic value of natural resources or alternatively the calculation of a user-cost allowance.

12. Accounting for environmentally sound production in consumption:

Environmentally sound production and consumption patterns allow for the maintenance or improvement of environmental quality. The costs of neglecting such maintenance, i.e. of allowing continuous environmental degradation by economic activities are actually economic costs for using natural resource services. These costs are allocated to the different industries and private households responsible for waste discharge and pollution or other impairments of the quality of air, water and land. Further impacts result from the involuntary "importation" of residuals, e.g. foreign waste dumping on national territories, and from the residuals of scrapped capital goods. Total environmental degradation is mirrored by a decrease in the value of non-produced natural assets and an "export" of residuals.

13. The deduction of environmental costs from conventional macro-indicators does not mean that these costs are actually internalized at the micro-economic level by individual economic agents.(3) These costs are imputations which do not affect supply and demand patterns and corresponding price formation during the accounting period. The deduction of such imputed values generates aggregates whose valuation has not gone through the mill of price formation in the market and which are therefore not strictly comparable to the value of market transactions presented in national accounts. The function of indicators, modified by such imputations, might thus be more to alert to structural distortions of the economy and unsustainable trends in its growth than to provide an accurate picture of past economic activity.

ESTABLISHING SEEAs IN MEMBER STATES

(a) Basis for Action

14. To do proper accounting and to measure more accurately what is true income is in itself important. But perhaps even more important is the contribution that this improved information will make to better policy-making at the national level. Some countries have already expressed their interest in establishing better accounting practices to include

natural resources in order to help decision-makers in making policies that better contribute to sustainable economic development. Substantial knowledge has been gained through research and case studies on natural resource accounting at the national level. In many countries relevant and sufficient information has been gathered although not necessarily organized in a way to be readily used in the preparation of SEEA. The preparation of national reports for UNCED may contribute to the organization of information for SEEAs.

(b) Objectives and goals

15. Countries could agree to promote the preparation of SEEAs at the national level as a concrete step towards better macro-economic management of development processes.

16. The Preparatory Committee may wish to endorse and lend special support for the work of the UN Statistical Office in developing methodologies and testing a SNA Satellite System of Integrated Economic-Environmental Accounting and request that the SNA Handbook of Environmental Accounting currently being prepared to be presented at its fourth session.

17. Countries may wish to request UNCED to gather information and coordinate with all relevant UN bodies the preparation of SEEA program to be adopted in the 1992 Conference and implemented in countries as a segment of Agenda 21.

(c) Options for Action

18. The UN Statistical Office and UNCED in collaboration of other relevant organizations such as UNEP, World Bank and ngo's will convene an experts meeting before the fourth session of the Preparatory Committee to seek coordination and propose concrete integrated accounting schemes to support sustainable development policies at the national and international levels. This expert group is expected to assist in the formulation of an appropriate data strategy for integrated accounting to be included in Agenda 21.

19. Countries could mobilize national bureau of statistics and national accounts to contribute in the development of SEEAs at the national level.

20. The relevant UN bodies, in cooperation with countries and NGO's could promote co-operation and capacity building in the development and establishment of SEEAs.

Footnotes:

(1) Institut National de la Statistique et des Etudes Economiques, Les Comptes Satellites de l'Environnement, Méthodes et Résultats (Les collections de l'INSEE, Ser C 130, Paris, INSEE, 1986).

(2) The attribute "sustainable" refers here to only to an allowance for the consumption of natural resource capital, similar to the one made for the consumption of produced capital in "net" national product or income calculations. There are of course other factors affecting the sustainability of production, income generation and economic growth such as substitution of primary capital inputs made possible by technological progress, discoveries of natural resources or changes in consumption patterns.

(3) In this regard the work being undertaken by the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting is contributing effectively to the establishment of guidelines for accounting and reporting practices of public and private enterprises in member states. See the report on its ninth session held on 5-15 March 1991. (E/C.10/1991/12).